



ENVIRONMENTAL ETHICS

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- I. Duties to Protect Biodiversity: Intrinsic Value Arguments
- II. Duties to Protect Biodiversity: Obligations Human and Divine
- III. Biodiversity and Human Flourishing
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stewardship Responsibility to protect biological diversity, as given by God or accepted from society.

GLOSSARY

- anthropocentrism** Position that only human beings have moral worth or intrinsic value.
- biocentrism** Position that all living beings have moral worth or intrinsic value.
- deep ecology** Activist philosophy that advocates radical personal and political change to protect wild nature.
- ecofeminism** Liberation philosophy that draws connections between preserving nature and promoting women's rights.
- environmental ethics** Philosophical discipline that specifies proper human relationships to the natural world.
- ethical holism** Position that complex aggregates, such as species, ecosystems, or human societies have intrinsic value.
- instrumental value** Value of something relative to human interests or desires.
- intrinsic value** Value of something independent of its value to people.
- rights** Justified claims to the protection of one's important interests.

ETHICS IS THE BRANCH OF PHILOSOPHY that seeks knowledge of human flourishing and right conduct toward others, so that we may act upon it. Modern philosophers have tended to limit their ethical concern to human beings, but throughout history people have also attempted to cultivate proper relationships with the rest of nature. Recently, philosophers have turned to this topic, largely in response to environmental degradation and the loss of biodiversity, and have created a new discipline: environmental ethics. Environmental ethicists attempt to specify appropriate human relationships to the nonhuman, natural world. In the course of their work, they have developed strong ethical arguments for preserving biodiversity. They have also challenged conventional views of happiness and human welfare and the materialistic values at the base of much modern life. While environmental ethics treat the full range of environmental issues, from air pollution to nuclear-risk assessment, this article focuses on ethical issues directly related to the preservation of biodiversity.

I. DUTIES TO PROTECT BIODIVERSITY: INTRINSIC VALUE ARGUMENTS

A. From Economics to Ethics

Biodiversity has high economic value, both direct and indirect. Direct economic values are provided by wild

game, seafood, fuelwood and timber products, and indigenous and high-technology medicines. Indirect economic values accrue from biodiversity's roles in waste disposal, climate regulation, protecting soil and water resources, recreation and ecotourism, and much more. Both directly and indirectly biodiversity safeguards or adds to human wealth, often justifying its protection in purely economic terms.

Thus, economic arguments by themselves provide a basis for valuing and protecting species, especially when we expand our concept of economic value from short-term, next-quarter profits to include longer term and indirect benefits. But economic arguments can also provide grounds for extinguishing species or for saving one species rather than another. In conventional economic terms, low value will be given to species having small populations or limited geographical range, small physical size or unattractive appearance, no immediate use to people, or no relationship to other species of economic importance. Such qualities may characterize a substantial proportion of the world's species, particularly insects and other invertebrates, fungi, nonflowering plants, bacteria, and protists. Halting profitable developments or making costly attempts to preserve these species may not have any obvious economic justification. Under some circumstances, economic justification could exist for destroying an endangered species, particularly organisms that cause disease or attack crop plants. Still, many people believe that such destruction is morally wrong even if it is economically profitable.

To say that an object has economic value is to say that it is useful to human beings or that they desire to possess it. In other words, it has an instrumental value: one can use it as an instrument for his or her purposes. However, we recognize that at least some entities, such as human beings, have value regardless of whether anyone else values or uses them. These entities have an intrinsic value: a value that is grounded not in their usefulness to others, but in what they are themselves.

Human beings, we usually think, have both instrumental and intrinsic value. Because we have intrinsic value we possess certain rights that no one can legitimately infringe, even if it is in their self-interest to do so. Conversely, we have certain duties toward other people that specify how we should or should not treat them in various situations. We cannot help but look at the people we interact with each day in terms of their usefulness to us, but if we look at them solely in these terms we disrespect their (and our) humanity and if we treat them solely as a means to our own ends we are likely to behave immorally.

Many conservationists argue that similar duties restrict the morally acceptable treatment of wild nature. They consider it wrong to destroy a rare woodland or cause a species to go extinct, even if this action is in an individual's or corporation's self-interest. Not only do we have any right to destroy any species, we also have a moral responsibility to actively protect species from extinction as the result of our activities. Opponents counter that this position is illegitimate because only human beings have intrinsic value. Unless our actions affect other people, directly or indirectly, any treatment of the natural world is morally acceptable.

B. Extensionist Arguments for Intrinsic Value

Proponents provide both extensionist and non-extensionist arguments for the intrinsic value of wild nature. Extensionist arguments ask what qualities give intrinsic value to human beings, and then assert that some other beings possess these same qualities. Therefore, they conclude, we should recognize the intrinsic value of these other beings and extend proper treatment to them.

One common justification for valuing human beings is our ability to reason. But some of the so-called higher animals also seem to possess the rudiments of reason. Chimpanzees and gorillas have been taught sign language involving several hundred words; wolves have an elaborate social life and the ability to coordinate long hunts; and dolphins, whales, and other cetaceans send complex signals that we are just beginning to understand. Many argue that because of these factors, we should not hunt these animals for food or sport, use them in research, or in general treat them solely as means to our own ends.

Other philosophers believe that sentience—the ability to perceive the surrounding world and feel pleasure and pain—demands moral consideration. The extensionist argument here states that because pain is bad we should avoid inflicting pain unnecessarily on others who can feel it—even if those others have fur, feathers, scales, or numerous legs. Immoral actions against human beings are wrong, at base, because they cause unnecessary pain; actions that cause other animals unnecessary pain are likewise immoral. Millions of people around the world act on such beliefs by abstaining from eating animals or using products that can only be procured by killing or harming them. Even most meat-eaters accept that inflicting gratuitous pain on animals is wrong, suggesting a widespread belief

that where there is sentience there exists some moral responsibility.

One possible problem with the extensionist arguments just discussed, from the point of view of conservationists, is that they only encompass certain organisms. Basing intrinsic value on some rudimentary form of reasoning or complex mental experience would appear to rule out most animals, for example, almost all invertebrate species. Basing moral consideration on the ability to feel pain includes a wider class of animals, but again many simpler animals and all plants, fungi, and single-celled organisms are ruled out.

However, extensionist arguments can be extended further by recognizing that all organisms have a drive to stay alive and reproduce. In the same way that we acknowledge the rights of people to live, have children, and satisfy basic needs, we may extend these rights to individuals of all species. In his autobiography, Albert Schweitzer maintained that “a man is ethical only when life, as such, is sacred to him, that of plants and animals as that of his fellow men, and when he devotes himself helpfully to all life that is in need of help.”

This position may lead to a very demanding code of conduct! Believers in strict biocentric equality assert that it is always wrong to kill individuals of any species (because of their intrinsic value) unless we need to do so to survive. Others believe that using nature to provide necessities and some measure of comfort is morally acceptable, but not to provide luxury goods. In this view, cutting down trees for firewood or to build a modest house is morally acceptable, particularly if this is done sustainably, whereas harvesting mahogany trees from rain forests to make expensive furniture for wealthy individuals half a world away is morally unacceptable. Whatever the particular judgments made, recognition of an intrinsically valuable organic world leads to distinctions between essential and inessential human uses and to a more limited use of natural resources.

C. Nonextensionist Arguments for Intrinsic Value

In addition to extensionist arguments, which point out similarities between wild nature and intrinsically valuable humans, there are arguments that find value in nature without referring to such similarities. Some believe it is a mistake to value other beings only for the ways in which they resemble humans. Robert Elliot in

The Monist (1992), suggested that natural organisms may have the following properties that give them intrinsic value: “diversity, stability, complexity, beauty, harmony, creativity, organization, intricacy, elegance, and richness.” These are qualities of natural organisms that we can appreciate—and that may call forth responses of personal restraint and active protection.

All species represent unique biological solutions to the problem of survival. They have solved the challenges placed before them by their environments and thrived. Some people see a value in this creativity and time-tested uniqueness. Others appreciate the beauty and elegance of the natural forms created by this process. Still others value the complexity and ingenious structures that science and close observation have revealed. People who know and value this uniqueness, beauty, and complexity feel a special horror at its permanent disappearance. After all, if an individual dies it may be replaced by another individual more or less the same, but take away the last passenger pigeon or giant moa and their like will never return. Nonextensionist arguments thus support preservation of species, as well as protection of individual organisms (see [Section I.E](#)).

Species interact in complex ways in natural communities. The loss of one species may have far-reaching consequences for other members of the community: other species may become extinct or the entire community may become destabilized. As we learn more about global processes we are finding out that many chemical and physical characteristics of the atmosphere, the climate, and the ocean are linked to biological processes in a self-regulating manner. More diverse biological communities may be able to deal better with environmental disturbances such as drought and global climate change. For these reasons, if we value some species, we should arguably protect all species.

D. Anthropocentric Denials of Intrinsic Value

Skeptics reply that even though some people do value nonhuman organisms and species, we are not obligated to do so, because only human beings have intrinsic value or genuine rights. Humans have a value beyond all other beings because only we are fully conscious and rational. Unless our actions affect other people, directly or indirectly, any treatment of the natural world is morally acceptable.

Such a viewpoint is anthropocentric—locating value solely in humans—and to many it seems the most obvious common sense, while departures from it

seem irrational or overly sentimental. The appellation “tree hugger” expresses this view, suggesting inappropriate sentiments toward trees, leading to inappropriate actions. It also suggests a callous disregard for the interests of people who cut trees for a living, whom we really should care about (consider the bumper sticker “Hug a Logger, Not a Tree”). People who value nature counter that anthropocentrism is selfish and that speciesism—the privileged treatment of one species over another—is no more justified than racism or sexism.

Although the debate between anthropocentrists and biocentrists has tended to incorporate all the uncertainties attending ethical justification in general, some clarification may still result. Charges of irrationalism on the contrary, it is possible to love and value non-human nature and act on this view. The challenge for biocentrists is to fashion fulfilling lives that limit their negative environmental impacts and help preserve and celebrate nature. Anthropocentrism also remains a rationally defensible position, which may be consistently acted upon. Anyone who values humanity based on qualities that we share with other species, however, cannot consistently deny intrinsic value to those other species. Furthermore, anthropocentrists who value humanity primarily for our ability to reason may consider the many arguments in favor of lessening pollution and preserving wild nature that appeal to our rational self-interest. Anthropocentrists are more likely than biocentrists to accept some amount of pollution in rivers or the extinction of certain species, but they also acknowledge human needs for clean air and drinking water, the enjoyment we get from fishing, swimming, and canoeing, and the value of biodiversity to science, art, and business. When it comes to particular environmental policies, anthropocentrists and biocentrists may find considerable common ground.

E. Ethical Holism

The preservation of biodiversity seems to demand that the needs of endangered species take precedence over the needs of individual organisms. For example, the US National Park Service killed hundreds of introduced rabbits on Santa Barbara Island off the California coast to protect a few plants of the endangered Santa Barbara live-forever (*Dudleya traskiae*) (Fig. 1). In this case, one endangered species was judged to be more valuable than hundreds of individual animals of a common species. Similarly, conservation biologists would not find it acceptable to destroy the last remnant of a rare biological community even if every species living



FIGURE 1 Beasts versus the biosphere. Government agencies judged the continued existence of the endangered plant Santa Barbara live-forever (*Dudleya traskiae*; the tall plant in the photo) to be more valuable than the common rabbits on its island home. The rabbits, which fed on the plant's fleshy leaves (shown at the bottom right), were killed to stop their destruction of this fragile plant species. National Park Service photograph.

there could be maintained in captivity; the ecological interactions and evolutionary processes of the community would be lost if the species only lived in captivity. These examples illustrate that most conservationists are holists, finding value in larger groupings, such as species and biological communities. They are thus sometimes willing to sacrifice the interests of individuals to preserve species and communities.

Many writers, especially animal welfare advocates, have difficulty assigning rights to species. Peter Singer and Tom Regan, two prominent philosophical animal welfare advocates, argue that species are not conscious entities and so do not have interests. In their view, to sacrifice the genuine interests of an individual animal, who can suffer or possess rights, to the imagined interests of a species, which cannot, is mistaken. Many animal welfare advocates also reject conservationists' special concern for native species over exotics: an

animal is an animal, with a greater or lesser ability to suffer, and this ability should determine our actions, rather than its point of origin.

On both biological and ethical grounds, however, most conservation biologists argue that species, rather than individual organisms, are the appropriate targets of conservation efforts. All individuals eventually die; it is the species that continues, evolves, and sometimes forms new species. In a sense, individuals are temporary representatives of species. Whether or not we allow them rights, species carry high value as the repositories of the accumulated experience and history of millions of previous life forms through their continuous, evolutionary adaptation to changing environments. The premature extinction of a species due to human activities destroys this natural process and obliterates its history. It can be regarded as a “superkilling,” because it kills future generations of the species and eliminates whole lines from the processes of evolution and speciation.

Furthermore, conservationists typically argue that species should be prevented from spreading beyond their natural ranges as a result of direct or indirect human activity. For example, the zebra mussel (*Dreissena polymorpha*) is native to the Caspian Sea, but it has recently become an aggressive invader of North American aquatic habitats (Fig. 2). Arguably this species should be destroyed whenever possible in North America, for two reasons. First, exotics often displace native species, sometimes contributing to their extinction. To prevent this loss of biological diversity we

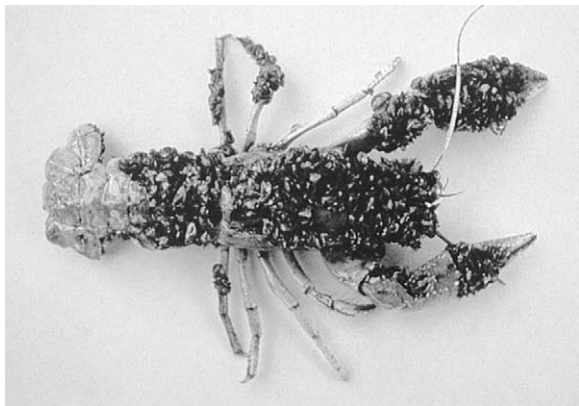


FIGURE 2 Unwelcome guests. The Zebra mussel (*Dreissena polymorpha*), a native of the Caspian Sea, was accidentally introduced into the Great Lakes and associated rivers in 1988. Since then the species has formed dense populations over a wide and ever-increasing area, outcompeting and choking out native species. In this case, thumb-sized Zebra mussels have almost totally encrusted a crayfish shell. Photograph courtesy of Ontario Ministry of Natural Resources from the Great Lakes Sea Grant Exotic Species Library.

destroy individual exotics, on the assumption that the exotic species will continue to thrive in its native habitats. Second, and more controversially, many conservationists deny intrinsic value to individual plants and animals that have spread beyond their natural range due to human activities. Part of what gives a species value is its unique evolutionary history and its ecological roles in native habitats, both of which are tied to particular places and biological communities. When these species instead invade new natural areas and destabilize or radically change their species composition, these justifications of their value no longer hold. Exotic species contribute to biodiversity in their native habitats but often diminish biodiversity when they become established and common in new locales.

II. DUTIES TO PROTECT BIODIVERSITY: OBLIGATIONS HUMAN AND DIVINE

A. Duties to Humans

That human beings have direct moral duties to other species remains controversial; that we have direct moral duties to other human beings is not (although great disagreement remains regarding their scope). Our duties to other human beings may support protection of the environment and preservation of biodiversity, based on their instrumental value to intrinsically valuable people.

We have responsibilities toward our neighbors and fellow citizens. Because of this, we must arguably minimize damage to the natural environment, since such damage harms not only other species but people as well. Increasingly, connections are being made between environmental pollution and high levels of human disease. For example, massive environmental pollution in the former Soviet Union has greatly increased cancer, birth defects, lead poisoning, and lung disease among the population. Much pollution and environmental degradation is unnecessary and could be minimized with better planning. Often pollution occurs because corporate leaders are unwilling to spend money to prevent it, despite the resulting ill effects on the health, wealth, or happiness of other people. Citizens must recognize the biological and social costs of environmental damage and force corporations to be good neighbors and governments to enact and enforce strong environmental laws for the common good.

We also have responsibilities toward future generations. Economic decision making tends to focus on the short term and it is this economic system that is

driving environmental change and degradation. In response, many ethicists have emphasized the importance of intergenerational justice. Humanity's unprecedented numbers and technological power mean that one generation can now radically remake the Earth that the next will inhabit, for better or worse. If in our daily living we degrade the natural resources of the Earth and cause species to become extinct, future generations will pay the price in terms of a lower quality of life.

This truth gives us arguments not just for keeping ecosystems safe for present human health, but also for preserving biodiversity for future human use, enjoyment, and development. For example, if species and wild places are lost, children will be deprived of one of their most exciting experiences in growing up—the wonder of seeing “new” animals and plants in the wild. These concerns are a powerful motivating force for the members of organizations such as the Sierra Club and The Nature Conservancy, who see themselves as land stewards preserving biodiversity for future generations.

Holmes Rolston in the *Encyclopedia of Environmental Biology* (1995) predicted: “It is safe to say that in the decades ahead, the quality of life will decline in proportion to the loss of biotic diversity, though it is often thought that one must sacrifice biotic diversity to improve human life.” Of course, this contention is debatable. Many argue that job creation and increased wealth are more important to future generations than the preservation of biodiversity. Debate on this issue, while inconclusive, is essential, because it forces us to specify the actual, long-term benefits of development projects and the sorts of societies we want to create for our children. Given our unprecedented power and the tendency to put personal interests above the common good, even inconclusive debate may be a force for creating a better future for all.

At a minimum, our duties to posterity seem to require us to live sustainably—that is, limiting our consumption so as not to degrade essential life-support systems or deplete natural resources that future generations will need. The world's governments have formally recognized this through treaties governing air pollution, whale hunting, and disposal of wastes in the ocean. One important treaty, the Montreal Protocol of 1987, reduced the permitted use of ozone-depleting chlorofluorocarbons (CFCs), leading to a phaseout of production 3 years later. The grave dangers these chemicals posed to future generations, with their potential to thin the Earth's protective ozone layer and cause millions of new cases of deadly skin cancer, clearly outweighed the interests of producers and users of CFCs, especially since many of these uses were not

essential to human survival (e.g., in luxury items such as hairsprays and air conditioners) and alternatives were available or quickly developed for most uses.

Similar appeals to the good of future generations have so far proved less successful in convincing world governments to reduce fossil fuel use to slow global climate change. This is partly due to strenuous lobbying by oil and automotive corporations and oil-producing nations, whose leaders have implicitly placed short-term profits above the health and well-being of future generations. Partly though it is because of the risks of increased fossil fuel use, though grave, are less certain than those associated with continued use of CFCs, while the economic costs of decreasing fossil fuel use are far higher.

Human maturity leads naturally to self-restraint and a respect for others. Many conservationists agree with Naess (1989), who writes that the further maturation of the human species will involve an “identification with all life forms” and “the acknowledgment of the intrinsic value of these forms” in an expanding circle of moral obligations. Moving outward from oneself, the circle would include duties to our family and relatives, our local community, our country, all humanity, mammals (Save the Whales!), all animals (Save the Snail Darter!), all species (Save the Yellow Lady Slipper Orchid!), ecosystems (Save the Rain Forest!), and ultimately the whole Earth (Fig. 3). Such an expansion of ethical concern involves new limitations on acceptable

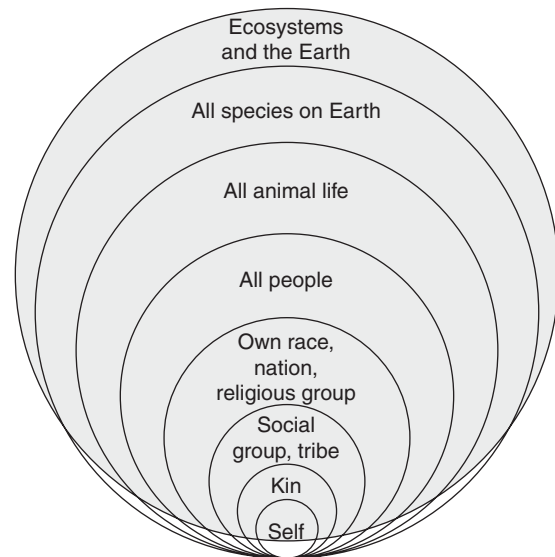


FIGURE 3 Human development. An ethical sequence in which the individual extends concern outward beyond the self to progressively more inclusive levels. Courtesy of Reed Noss.

actions, but also new opportunities for personal growth and flourishing.

Although some worry that recognizing intrinsic value in nature devalues human beings, many environmental philosophers argue that respect for human life and human diversity is compatible with a respect for nonhuman nature. Citizens of all countries will be more likely to accept their responsibility for protecting biological diversity, they assert, when they have full political rights, a secure livelihood, and an awareness of environmental issues. Some of the most exciting developments in conservation biology involve supporting the economic development of disadvantaged rural people in ways that are linked to the protection of biological diversity. Helping poor women establish sustainable plots of cash crops and achieve a degree of economic independence may reduce the need to overharvest wild species. Working with indigenous people to establish legal title to their land may give them the means to protect the biological communities in which they live. Actions taken to protect species and biological communities should, whenever possible, benefit people as well.

B. Duties to God: Religious Stewardship

Various preindustrial cultures successfully coexisted with a rich local flora and fauna for hundreds of years, in part because their religions and societal ethics encouraged personal responsibility and thoughtful use of resources. People in these societies respected wild animals and plants even as they harvested them or borrowed their habitat for human purposes. For example, the Cherokee Indians of the southeastern United States spoke special prayers to the deer that they killed, telling the deer spirit that they indeed needed the meat, that they would not waste it, and that they would bury the bones with due solemnity. Traditional peoples often treated rivers, mountains, and other ecosystems as sacred places to be approached with reverence and an appreciation for what they were, rather than for what human beings could make of them.

Many modern religious adherents abhor the destruction of species, because they are God's creation. If God created the world, then presumably the species God created have value. Within the Jewish and Christian traditions, human responsibility for protecting animal species is explicitly described in the Bible as part of a covenant with God. The Book of Genesis describes the creation of the Earth's biological diversity as a divine act, after which "God saw that it was good"

and "blessed them." In the story of Noah's Ark, God commanded Noah to save two of all species—not just the ones human beings found useful. God provided detailed instructions for building the ark, an early species rescue project, saying "Keep them alive with you." After the flood subsided, the animals were released to repopulate the Earth. This story, versions of which were told throughout the ancient Near East, can be interpreted as an early awareness of the importance of biological diversity.

The prophet Mohammed, founder of Islam, continued this theme of human responsibility, saying "The world is green and beautiful and God has appointed you as His stewards over it. He sees how you acquit yourselves." Many other religious traditions also support the preservation of nature. For example, Hinduism locates divinity in certain animals and recognizes a basic kinship between humans and other beings, including the transmigration of souls from one species to another. A primary ethical concept in Hinduism and other Indian religions, such as Jainism and Buddhism, is *ahimsa*—avoiding unnecessary harm to life. In attempting to live this ideal, many religious people become vegetarians and live as simple a life as possible.

III. BIODIVERSITY AND HUMAN FLOURISHING

Economic arguments stress that we should preserve biological diversity because it is in our material self-interest. Ethical arguments based on the intrinsic value of wild nature, our duties to other human beings, or our duties to God stress that we should sometimes act altruistically; that is, we should set aside our personal interests to preserve biological diversity. A second kind of ethical argument appeals to a complete understanding of our self-interest, arguing that preserving biodiversity and developing our knowledge of it will make us better and happier people. The following are the main arguments for preserving biodiversity in our own enlightened self-interest.

A. Health and Wealth

It cannot be repeated too often that biological diversity preserves our basic life-support systems of food production, water supply, oxygen replenishment, waste disposal, soil conservation, and more. People are healthier and more productive in clean, intact environments. We depend on this and should value

it. Similarly, biodiversity allows us to create tremendous economic wealth, directly and indirectly. An article published in *Nature* in 1997 by Robert Costanza and others, "The Value of the World's Ecosystem Services and Natural Capital," estimated that the world's ecosystems provide \$32 trillion per year of value to people, substantially higher than the \$18 trillion per year of goods and services those people produce themselves. In other words, human society could not exist without what the natural world provides us for free, nor could we afford to pay for substitutes even if they existed.

B. Esthetic and Recreational Enjoyment

Nearly everyone enjoys wildlife and landscapes at an esthetic level and this is part of a good life. The beauty of a field of wildflowers in Glacier National Park or a migrating warbler on a spring morning in a city park enriches the lives of those who appreciate them. For many people, a high quality of life involves experiencing nature firsthand. Simply reading about species or seeing them in museums, gardens, zoos, or videos will not suffice. Hiking, canoeing, nature photography, and bird watching are physically, intellectually, and emotionally satisfying.

Hundreds of millions of people spend tens of billions of dollars annually in these pursuits, proof enough of

their value. As the world becomes more crowded, it becomes ever clearer that these activities are in competition with other human uses. We are creating a world with ever-diminishing opportunities for esthetic and recreational encounters with wild nature (Fig. 4). If species and ecosystems are not to disappear altogether, they must be consciously preserved.

C. Artistic Expression and Scientific Knowledge

Throughout history, poets, writers, painters, sculptors, and musicians of all cultures have drawn inspiration from wild nature. Nature provides countless forms and symbols for visual artists to render and interpret, while poets have often found their greatest inspiration in either wild nature or pastoral countrysides (Fig. 5). Preserving biological diversity preserves possibilities for all artists. It also allows those of us who appreciate such creative acts access to the sources and experiences that inspired them. A loss in biological diversity could very well limit the creative energies of people in the future and thus restrict the development of human culture. For example, if many species of whales, butterflies, and orchids go extinct in the next few decades, whole sets of imagery will be lost to the direct experience of future generations of artists.



FIGURE 4 Reaching out. Most people find interacting with other species to be an educational and uplifting experience. Here, people greet a minke whale that is being rescued after it became entangled in a trawler's gill net; the float behind the whale was attached to the net to keep the whale at the surface so that it could breathe. Later, rescuers were able to release the whale from the netting. Reproduced by permission of Scott Kraus, New England Aquarium.



FIGURE 5 Celebrating nature. Rare wildflowers and butterflies are the inspiration for botanical sculptor Patrick O'Hara. In his studio in western Ireland, O'Hara molds, sculpts, and paints delicate porcelain scenes from nature that inspire an appreciation of biodiversity in a worldwide audience. Photograph courtesy of O'Hara (2006).

Like art, our growing knowledge of nature through science is one of humanity's greatest achievements. This knowledge is facilitated by the preservation of wild nature. Wild areas allow the study of natural ecological interactions. Wild species preserve the record of evolution. Young people are inspired to become scientists through personal contacts with nature, while those who do not pursue science professionally can take a basic scientific knowledge and apply it to an understanding of their own local fields, forests, and streams.

Two of the central mysteries in the world of science are how life originated and how the diversity of life found on Earth today came about. Thousands of biologists are working on these questions and are coming ever closer to the answers. Recent discoveries of bacteria deep in the Earth's crust and new species of animals in tropical rain forests are important developments in this exciting story. New techniques of molecular biology allow greater insight into the relationships of living species, as well as some extinct species known only from fossils. However, when species become extinct, important clues are lost and the mysteries become harder to solve.

If *Homo sapiens'* closest living relatives, the great apes, disappear from the wild, we will lose important information regarding human physical and social evolution.

D. Historical Understanding and Religious Inspiration

Knowing nature, both scientifically and through personal experience, is a key to self-knowledge and an understanding of human history. In walking the landscapes that our ancestors walked, we gain insight into how they experienced the world, at a slower pace and without mechanized aids. People often forget just how recently humankind has moved to ultrafast transportation, fully illuminated cities that shut out the night, and other aspects of modern life. Preserving natural areas allows us to develop our historical imaginations.

Many religions have traditions of "wandering in the wilderness" to commune with God or with spirits. In the Western tradition, Moses, Isaiah, Jesus, and St. Francis of Assisi all sought out the solitude of wilderness. So did the Chinese sage, Lao-tzu, the Japanese Zen poet, Basho, and generations of Lakota vision-seekers. Being in nature allows us to clear and focus our minds and sometimes experience the transcendent. When we are surrounded by the artifacts of civilization, our minds stay fully focused on human purposes and our everyday lives. Religion probably would not disappear from a totally tamed human environment, but perhaps it would become diminished for many.

In brief, while the preservation of biodiversity sets limits to some human activities, it is a prerequisite for our continued enjoyment of others. There are good reasons to believe that preserving and exploring biodiversity can make us better, happier people. Many conservationists are convinced that a better understanding of our true self-interest would lead to greater efforts to protect biological diversity.

IV. ENVIRONMENTAL PHILOSOPHIES

A. Deep Ecology

Paul Sears, recognizing that increased knowledge would lead to the questioning of destructive practices common in modern society, and often taken for granted, called ecology a "subversive science." During the twentieth century, ecologists, nature writers, and practicing environmentalists have increasingly articulated an appreciation of nature and spoken of the need for changes in human lifestyles to protect it. "Green" political parties and activist conservation organizations such as Greenpeace, EarthFirst!, and India's Chipko movement have appeared throughout the world.

TABLE I
The dominant anthropocentric philosophy contrasted with deep ecology

Dominant worldview	Deep ecology
Humans dominant over nature	Humans living in harmony with nature
Natural environment and species are resources for humans	All nature has intrinsic worth, regardless of human needs
A growing human population with a rising standard of living	A stable human population living a simple life
Earth's resources are unlimited	Earth's resources are limited and must be used carefully
Ever higher technology brings progress and solutions	Appropriate technology must be used with respect for the Earth
Emphasis on material progress	Emphasis on spiritual and ethical progress
Strong central government	Local control, organized according to watersheds, bioregions, or other natural units

One well-developed environmental philosophy that supports this activism is known as deep ecology. Deep ecology builds on two basic premises: biocentric equality and self-realization. Biocentric equality expresses “the intuition ... that all things in the biosphere have an equal right to live and blossom and to reach their own individual forms of unfolding” (Devall and Sessions, 1985). Humans have a right to live and thrive, but so do the other organisms with whom we share the planet.

Self-realization describes a striving to grow, develop, and find fulfillment. Human beings are assumed to share this goal with the rest of nature. In the case of humans, deep ecologists believe that true self-realization involves spiritual growth and an expansion of knowledge and concern, rather than an increase in material wealth. Individual human self-realization should lead to a concern with all of nature: the preservation and development of the larger wholes to which we belong, including both human and natural communities. Deep ecologists articulate this position in opposition to a “dominant worldview” that makes human concerns paramount and views human happiness in materialistic terms (Table I). Deep ecology’s idealism and its call to action make it an appealing philosophy for people concerned with protecting biodiversity.

B. Ecofeminism

Ecofeminism represents another recent, important development within environmental ethics. Ecofeminists see a connection between the domination of women and the domination of nature. They attempt to specify links between these two forms of domination, and advocate both environmental protection and full, equal rights for women.

Like deep ecologists, ecofeminists argue that how we conceptualize wild and human nature has important ethical consequences. Karen Warren argues that

some conceptual frameworks are inherently oppressive, because they split the world up into “value dualisms, that is, disjunctive pairs in which the disjuncts are seen as oppositional (rather than as complementary) and exclusive (rather than as inclusive), and which place higher value on one disjunct rather than the other” (Armstrong and Botzler, 2003). Thus men are privileged over women, human culture over nature, animals over plants, and reason over emotion. The inferior disjuncts tend to be lumped together: women may be seen as closer to nature, more emotional, or less rational. Such conceptual frameworks legitimize discriminatory treatment of those “others” who fall on the wrong side of these value dualisms.

Ecofeminists launch a three-pronged attack on such a “logic of domination.” First, they may deny that certain differences exist, that they are hard and fast differences, or that they are as extreme as they are portrayed. For example, most ecofeminists simply deny that women are less rational or more emotional than men. In like fashion, they may point out similarities between humans and the other animals and downplay our differences. Second, ecofeminists may deny that actual differences make some beings morally superior to others. Human beings are superior reasoners compared to frogs, but that does not mean that we are therefore morally superior, in the sense that our interests should always trump theirs. Third, ecofeminists may deny that moral superiority underwrites domination. Even if humans are morally superior to frogs, it may still be wrong to kill them for food or destroy the last members of a rare frog species to create a new subdivision. Perhaps the proper response to those inferior to us in abilities or moral value is care and restraint.

C. Humanism: Our Default Mode

Like deep ecologists and ecofeminists, conventional ethical philosophers, including Kantians, utilitarians,

and theologically grounded ethicists, have begun to address environmental issues. Most philosophers who have considered these matters have found strong reasons to support environmental protection. As previously noted, biocentrists and anthropocentrists may agree on a wide range of measures to protect the environment, despite large philosophical differences.

Still, some philosophers and many members of the general public remain unconvinced of any moral imperative to protect biological diversity. Their position may be characterized as humanism, a philosophy committed to the following propositions:

1. Biological diversity exists for humans, has no value apart from humans, and need not exist apart from humans.
2. The transformation of wild nature into natural resources adds value to nature, since nature possesses value only in human use. Indeed, the ever more thorough transformation of wild nature allows increased human numbers to lead longer, happier, and better lives.
3. The creation of just societies filled with flourishing individuals is the highest achievement of which humans are capable. We should judge ourselves based on our technological, scientific, artistic, and social progress—not on whether we preserve nature.

Like the philosophies discussed earlier, humanism may be developed in a variety of ways. A humanist's ideal society may be more or less egalitarian, wealthy, or stable, and more or less racially and culturally diverse. But humanists share a belief in the centrality of humans. They generally applaud increased human numbers, wealth, and technological power, and the development of new arts and activities that flourish in highly artificial environments. For these reasons they see little to lament in the loss of biodiversity.

Humanism may be called humanity's default mode, since current trends are moving us more and more in this direction, whether it is desirable or not. We are creating a world with much less biological diversity and this artificial world has come to seem normal, indeed natural, for many people. It is not, however, inevitable. Human beings can reconnect to nature and

curb our activities that threaten it. Environmental ethics remind us that we have many reasons to value and protect Earth's remaining biological diversity.

See Also the Following Articles

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